

Association of Black Race with Improved Outcomes Following Definitive Radiotherapy with Androgen Deprivation Therapy in Localized Prostate Cancer: An Individual Patient Data Meta-Analysis of Eight Randomized Trials

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Background: Overall, Black men have a two-fold increased risk of dying from prostate cancer compared with White men. However, race-specific differences in response to treatment remain unknown. The purpose of this study was to compare overall and treatment-specific outcomes of Black and White men with localized prostate cancer receiving definitive radiotherapy (RT).

Methods: We performed an individual patient data meta-analysis of 9259 patients (including 1674 [18.1%] Black men and 7585 [81.9%] White men) enrolled on eight RTOG/NRG Oncology randomized controlled trials evaluating RT ± short-term or long-term androgen deprivation therapy (STADT and LTADT). Main endpoints of interest were all-cause mortality (ACM), prostate cancer-specific mortality (PCSM), distant metastasis (DM), and biochemical recurrence (BCR), stratified by National Comprehensive Cancer Network (NCCN) risk group. The primary analytic method for PCSM, DM, and BCR, was the Fine-Gray subdistribution HR (sHR), with death as a competing risk. To estimate the treatment effect within and between races, we included the race, treatment strategy and their interaction as predictors in both Cox and Fine-Gray individual patient data (IPD) models. Models were adjusted for age, and (for the intermediate- and high-risk strata) for GS, and clinical T stage.

Results: Median follow-up was 8.7 years for surviving patients. Though Black men presented more often with NCCN high-risk disease (39.2% vs 33%, $p<0.001$), they had had lower unadjusted 10-year rates of BCR (38% vs. 40.1%, $p=0.06$), DM (8% vs. 12%, $p=0.002$), and PCSM (3.5% vs. 5.3%, $p<0.001$). When examining the high-risk stratum specifically, Black men had lower 10-year rates of BCR (46.1% vs. 50.4%, $p=0.02$), DM (14% vs. 21.6%, $p<0.001$), and PCSM (4.9% vs. 9.8%, $p<0.001$). ACM rates were similar for Black and White men overall and in the high-risk stratum. After adjusting for age and disease characteristics, Black men with high-risk prostate cancer receiving RT+STADT had significantly lower BCR (sHR [subdistribution hazard ratio] 0.73, 95% CI 0.40-0.83, $p<0.001$) and DM rates (sHR 0.64, 95% CI 0.40-0.83, $p<0.001$), with the addition of STADT having a significantly greater impact on BCR in Black men ($p=0.004$). Black men with high-risk prostate cancer receiving RT+LTADT also had significantly lower DM rates (sHR 0.51, 95% CI 0.29-0.87, $p<0.001$), and derived significantly greater improvements in BCR and DM than White men ($p=0.03$ for both).

Conclusions: Black men enrolled on randomized trials with long-term follow-up present with higher risk disease, but have better BCR, DM, and PCSM outcomes with RT-based therapy compared with White men. Among men with high-risk disease, the benefits of adding ADT to RT appear to be significantly greater in Black men compared with White men.

Conflict of Interest: Dr. Kishan has received honoraria from Varian Medical Systems, Inc. and ViewRay Inc., outside the scope of the submitted work.

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